How Connectivity Motivates Behaviour Change:
Gamification as an Effective Social Media Platform for BC QuitNow Services

by

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Abstract

Helping male tobacco users quit tobacco use by providing novel ways to engage with them has been a long and difficult process for tobacco cessation services such as BC QuitNow. With the explosion of technology in today’s culture, communication channels such as social media provide a unique opportunity to increase engagement for pro-social behaviour change in individuals such as smokers. This study capitalizes on the interest of BC QuitNow Services to review and expand their social media platform, taking as its focus male tobacco users and QuitNow staff and exploring the literature on gamification to assess the value of games as health promotion tools. The study provides a research basis for and outline of an actual planned gamification prototype, co-developed with tobacco users and QuitNow staff, through a focus group and two surveys, with an emphasis on reducing tobacco use.
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Section One: Introduction

Over the years there has been a proliferation of social media projects attempting to connect and engage people in health behaviour change with varying results. “Although social media have considerable potential as tools for health promotion and education, these media, like traditional health promotion media, require careful application and may not always achieve their desired outcomes” (Korda & Itani, 2013, p.15). Even with these challenges, the steady increase of social media usage in adult internet users provides health communicators with low-cost, large-audience reach options that otherwise would not be available through conventional methods. Unlocking that potential for social media to generate new audiences has led BC QuitNow Services, a British Columbia government-funded tobacco cessation function operated by the non-profit BC Lung Association, to support the investigation of how they currently engage and connect tobacco users, particularly the males who represent the majority of tobacco users, so as to inform a future expansion of QuitNow Services’ outreach. This current study is a contribution to that investigation.

Motivation, engagement and interconnectivity of social media users are key topic areas within the existing social media and health promotion literature (Webb, Joseph, Yardley & Michie, 2010; Freeman & Chapman, 2011; Neiger et al, 2012; Greene et al, 2010; Kamal et al, 2013). By identifying key indicators that influence social media users, the existing research serves as a touchstone for this study. BC QuitNow Services’ desire to assess and expand on their current social media platform afforded a unique opportunity for this study to contribute to a gap in the literature; this gap related to the effectiveness of social media platforms in the context of health behaviour change. In addition, this project also sought to draft principles or a “blueprint” for a prototype of a gamified, social media-based tobacco cessation tool for the service, thus
translating the research done here into the application that accompanies this thesis and, through this example, more tangibly exploring the effectiveness of social media as health promotion tools.

Gamification, as will be discussed at length below, refers to the adaptation of properties of games—be they video or more traditional games—in solving real-life problems or toward real-life purposes, such as might be found in education, social change, or organizational development. Game elements, such as points, levels, and scripted scenarios, have been used to extend the creative and empowering qualities of the gaming experience to address energy scarcity (the World without Oil game) or succor people suffering depression (SuperBetter). The draft plan for this imagined prototype will involve the identification of critical components that support the connection between tobacco use cessation and the gamification process. This blueprint focuses on conceptualizing the features and conditions that would help to gamify tobacco use cessation, and is therefore not an actual game itself; this thesis then, among other things, is a prelude to an actual health promotion game that might be delivered via social media. Therefore, this study assessed the role that social media has played at BC QuitNow Services to engage male tobacco users and translated that into an effective intervention platform—in abstract and speculative form—for health behaviour change.

This project uses an Action Research methodology that emphasizes collaboration between researchers and subjects, while grounding that methodology within a social constructivist understanding or “paradigm” of the epistemological foundations of research. With that orientation in mind, this study answers the following research question that is central to this project: “Could gamification be an effective social media platform for BC QuitNow Services, and if so, how?” The social constructivist paradigm is an appropriate backdrop for this study
because it is rooted in education and psychology, both of which are intrinsically linked to health behaviour change in a digital context. Gamification, again defined as “the use of game design elements in non-game contexts” (Deterding et al, 2011), is a relatively new phenomenon that offers health promotion practitioners an audience that would not otherwise be interested in products that promote health behavior change (para. 1). “Games are rapidly becoming an important tool for improving health behaviours,” Ferguson (2012, p. 1) writes, emphasizing the growing interest in games as health promotion methods, “such as healthy lifestyle habits and behaviour modification, self management of illness and chronic conditions, and motivating and supporting physical activity.” This study took advantage of the attention being paid to gamification within social media platforms to inform and advance current efforts in health behaviour change. The study’s intent was to build on existing health promotion theoretical frameworks to specify how this type of product could increase involvement from current tobacco users, and to this end, enlisted actual male tobacco users and QuitNow staff into a focus group to examine gamification’s usefulness.

This study grounds the assessment of BC QuitNow Services’ social media in Ajzen’s theory of planned behaviour (Ajzen, 1985) and social identity theory (Dholakia, Bagozzi & Pearo, 2004), discussed in more detail in the methods section below. This multiple theoretical framework assists in the development of the gamification blueprint, notably by identifying motivating factors and confidence in performing the health behaviour change. The study utilized qualitative methods, as manifested in a focus group with young male smokers and QuitNow staff in two post-focus group surveys that followed, to assess participants’ knowledge, beliefs and behaviours relating to smoking, to develop the product blueprint, and to review participants’ experience in the process. The study’s data analysis provides a practical road map for BC
QuitNow Services as they continue to develop and refine their gamification product while identifying a promising practice for the tobacco control community. The project offers an opening to future theoretical inquiry into gamification’s use in health promotion as well as practical guidance for developing a tobacco cessation “game” with even greater future participation from the target audience of young smokers. A gamification product in tobacco control, albeit merely conceived here in draft form, would be the first of its kind in British Columbia. That speaks to the experimental potential and promise of the “application” portion of this thesis for reaching a new generation of smokers who wish to quit and within an idiom they understand--gaming.

The literature review examines the existing research with a focus on engagement and connectivity relationships to gamification within social media platforms. For purposes of this thesis, “engagement” is defined as the act of involving your target audience and “connectivity” is providing a platform for people to communicate and participate with each other. Gamification is seen by many in the business world as the next frontier for increasing market share and customer involvement. For instance, Gartner (2011) estimates that “over fifty percent” of businesses will look to gamification by 2015 with a focus on marketing and customer engagement (as cited in Hamari, Koivisto & Sarsa, 2014, para. 1). McGonigal (2011) takes this further by declaring that games are the future for real ideas and providing a platform for change (p. 13). Moreover, Anderson and Rainie (2012) cited a compelling Pew Research Center report on gamification; the report indicated that 53% of respondents polled agreed that by 2020 “gamification will be making waves on the communications scene and will have been implemented in many new ways for education, health, work, and other aspects of human connection” (p. 2).
By identifying key literature within the context of gamification, social media, health behaviour change and connectivity, this study informs practice, identifies gaps in the literature, and recognizes key influencers in the field through their contributions. Additionally, the research contributes to our understanding of how social media might be used for effective health behaviour change, which is the overall purpose of this study. This study is an important contribution to the existing literature because it provided an assessment roadmap, identified best practices, developed a blueprint for a co-created innovative product prototype that can be duplicated by other organizations, and contributed to evaluating social media’s connection to health behaviour change.

Using games to address serious issues may seem like a far-fetched idea and in fact, may not seem like a realistic approach in health communication for tobacco cessation. Research in gamification is a fairly new phenomenon that is showing great promise as an appropriate strategy to inspire, engage and create the space for both individual and societal change. Scholars such as Jane McGonigal, Sebastian Deterding and Juho Hamari are a few of many that have studied and have been successful in demonstrating cause and effect where games and personal, organizational, and change are concerned. And books like McGonigal’s *Reality is Broken: How Games Make Us Better and How They Can Change the World*, Karl Kapp’s *The Gamification of Learning and Instruction*, and Josh Lerner’s *Making Democracy Fun: How Game Design Can Empower Citizens and Transform Politics*, demonstrate gamification’s range and ambition to take game principles into all corners of the culture—including health communication and, particularly, tobacco cessation.
Section Two: Literature Review

In order to provide a sound footing to address the study’s purpose, the literature review focused on the essential themes relating to effective social media platforms, in particular drawing from the current research on gamification, social media impacts, health communication for behaviour change, and connectivity. “Social media” is defined as users being able to share and create content through computerized means and participate in social networking. Each theme was weighed against the overall research question, objectives and purpose of the study to determine the most important points from the existing literature. Only those points gleaned from the literature that relate to the research themes here or identify gaps in the existing research are highlighted in the review. Every effort was made to locate this present study within the larger context of the voluminous research literature in these areas. In that way, the contributions that this study provides to those several wider tracts of intellectual territory—be they again gamification, social media, or health communication—are made more clear.

The themes of user motivation, immediacy, co-creation, connectivity, interactivity and engagement were chosen for this project to streamline the vast body of work in social media research, while also focusing my efforts in those areas that have the most applicability to the project. With this in mind, the literature review has been organized into sections corresponding to those themes; additionally, the literature review will close with a consideration of gaps in the research literature and implications for future research.

(i) user motivation

Researchers believe that while gamification opens up a wealth of possibilities, there is an intrinsic danger of underestimating the complexity involved in developing a game in support of some real-world task or problem. To manage that complexity, scholars agree that successful
gamification efforts involve an interface between researchers, game designers and the target audience in both the development and implementation stages (Hamari et al., 2013; Deterding, Khaled, Nacke & Dixon, 2011; Nicholson, 2012; McCallum, 2012; Ferguson, 2012). Of particular significance, most gamification scholars argue, is the role of the end-user of a gamified real-life application—the intended player. “Meaningful gamification puts the needs and goals of the users over the needs of the organization,” Nicholson (2012) writes. “[I]f users have a positive and meaningful game-based experience that is well-connected to the underlying non-game setting, then the organization will benefit in the long term” (p.6). To this purpose, Hamari (2014) writes that “the effects of a game are greatly dependent on the context in which the gamification is being implemented, as well as on the users using it” (para. 1). Deterding particularly emphasizes the place of the user in the design of gamified applications in real life. He (2011) writes that “the user experience of video games has itself become a substantial subject of Human Computer Interaction (HCI) studies, with researchers developing models and methods as well as heuristics for the usability or playability of games” (p. 2426). This study builds on the premise of a user-centred approach, as its action research methodology provided an immediate platform for information yielded by the male smokers and QuitNow staff in the focus group to drive the development of the prototype blueprint.

Determining the motivational factors that create the connection for users in the context of shared goals of health behaviour change among participants is an essential element in assessing applicability. In their study on gamification, Hamari et al. (2014) utilized the theory of planned behaviour (Ajzen, 1991) and found that attitudes toward gamification are a critical component of the attraction to and the use of the gamified product; such attitudes are also a strong factor in ascertaining whether or not players tell others about it (Hamari et al., 2014, para. 27). This
strong theoretical link to behavioural intentions validated that identifying motivational influences and attitudes are a critical component of any gamification prototype. McGonigal (2011), for her part, stresses the seductive value of “fun” in motivating participants in gamified applications to take creative risks and to immersively commit themselves to transformation and deeper learning within the game (p. 38). If we are to understand the motivating factors, then we must recognize the influence of social connections and fun that expands prototype applicability and ultimately addresses organizational goals.

(ii) immediacy

Just as gamification demonstrates motivational effects and a user-centred emphasis so helpful to action research, social media provides a unique contribution to health communication with regard to immediacy. That is, social media fosters a type of immediate interaction or dynamic and collaborative engagement that allows its users to influence and be influenced towards health behaviour change. For example, when I discuss immediacy, I refer to the speed by which participants can participate in uploading content and creating connections without a real understanding of those they are interfacing with.

Boyd and Ellison (2007) stress the importance of immediacy as part of the very definition and nature of social media. “Social network sites are defined as web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others” (p. 211). The key is the emphasis on social media’s connection, fluidity and immediate engagement, a feature which leads people to gravitate to each other around like-minded pursuits. Lefebvre & Bornkessel (2012) stress the value of such immediacy to health communication work. “People and organizations can now quickly create
and deliver content through more interactive Web sites and online communities where, for example, people with medical conditions can seek, give, and receive advice from other patients and other healthcare providers” (2012, p. 1829).

The ability to mold and shape content with immediate, worldwide connections for feedback and adaptation opens up a world of possibilities, far past your own particular location and this intensifies the innovations possible. Of particular interest to this study is the connection to effectiveness in smoking cessation. Brendryen & Kraft (2008) suggest that “digital media” offers opportunities to expand smoking cessation interventions while keeping costs for development relatively low, effective and available to anyone. (2008, p. 478) This relatively low-cost option opens up many possibilities to test interventions and refine options that are available to tobacco users.

(iii) co-creation

An incredible advantage to health promotion in the use of social media is the capability of co-creation. Co-creation is defined as working synergistically with the target audience of the intervention to develop the product. In fact, it is clear that co-creation of content that connects to the audience is a critical component of any effective social media platform. “It’s now possible to solicit and aggregate information from people from all over the world and arrive at a collective decision with a few clicks of a mouse” (Sarasohn-Kahn, 2008, p. 5). That collective wisdom drives practitioners to provide more opportunities for co-development of their platforms, as Lefebvre et al (2013) note. “Social media have the capability of moving health care and health promotion to not just more people-centred endeavors, but to more collaborative ones as well” (p. 1834). This study acknowledged the power of co-creation in the context of gamification. It also demonstrated the theme’s relevance with a focus on the impact of co-creation upon attitudes,
beliefs and behaviours of focus group participants, and more importantly how the co-creation of the prototype influenced the male tobacco users’ own tobacco cessation.

(iv) connectivity, interactivity, and engagement

The collaboration between social media experts, game developers and the health sector makes for a powerful alliance for constructing innovative platforms that increase engagement and connectivity, two aspects of social media experience that can be appropriately measured for effectiveness in health behaviour change. Scholars identify connectivity and interactivity within social media as important themes for further research due to social media’s exponential growth and its rich new possibilities for interpersonal communication (Backstrom, Huttenlocher, Kleinberg & Lan, 2006; Bargh & McKenna, 2004; Kiosis, 2004; Ellison, Steinfield & Lampe, 2011). This emphasis on identifying what impact social media has on interpersonal relationships brings into question the typical definitions of interactivity. Kiousis (2002) defines interactivity as follows: “Interactivity is both a media and psychological factor that varies across communication technologies, communication contexts, and people’s perceptions” (p. 355).

Bargh and McKenna note how the social media experience is conducive to trust-based connections amid users. Connectivity within social media allows the participants to find others of similar pursuits and develop an on-going relationship through the digital domain. “Research has found that the relative anonymity aspect encourages self-expression, and the relative absence of physical and nonverbal interaction cues (e.g., attractiveness) facilitates the formation of relationship on other, deeper bases such as shared values and beliefs” (Bargh & McKenna, p. 586). Speaking specifically to that most popular of social media, Facebook, Ellison et al. emphasize the place that user-defined personal profiles have in encouraging connection and interaction. Ellison et al., (2011) write that “Facebook provides a forum for sharing that attracts
like-minded individuals and allows for creation of a unique personal profile to increase communication options” (p. 889). Users can be who they want to be, connect with those that they have something in common with, and utilize social media as a way to communicate about themselves or things of interests to the group. It will be important to acknowledge within the prototype blueprint the importance of anonymity, customization and user control over their experience, and what implications these attributes will, or will not have, on social media’s connectivity for health behaviour change.

**(v) gaps in the research literature and implications for future research**

Although research on social media and gamification as it might relate to health communication is increasing due to the proliferation of social media and the use of game elements within health behaviour change, there are gaps in the literature and important points to consider for future research. First, the clarity of definitions and connections to theoretical frameworks need to be described within the building blocks of the studies. The existing research is very clear, at least in principle, that in order to be successful linkages to theory need to be made. But as I looked into the research, and in particular program evaluations, attention to theory was inconsistent. Taking that into consideration when designing this study, I emphasized the health behaviour change theoretical framework that contributes to my findings. Second, it is unclear within the existing literature as to whether attention is paid to developing an evaluation template within gamification prototype designs. To measure effectiveness of this prototype design, a suggested template will be discussed with the sponsoring agency, QuitNow, to ensure that this contributes to the gap in literature. Third, collaboration for co-creation and measuring the experience of the end user as a collaborator are lacking in the current literature. A key element of this study, post-design, is to measure the attitudes, beliefs and behaviours of the user
experience in action research. The study findings will provide some data for future consideration in the co-creation of gamification prototypes in the health behaviour change domain.

**Section Three: Research Design**

My thesis, utilizing an Action Research Methodology, provided BC QuitNow Services with a gamification platform that will engage and connect primarily male tobacco users. “Action Research,” Heron and Reason (2006) write, “is a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment” (para, 2). Action Research provides the appropriate backdrop because of its strong roots in the interdependence of the subjects and researchers to work collaboratively in the development of a product design; this creates something that reflects and empowers the user. Furthermore, and consistent with this collaborative project involving male tobacco users and QuitNow staff, the social constructivist paradigm was acknowledged as the epistemological foundation to this work. Its suitability derives from the fact that this paradigm holds that the world is developed through our decisions and language, and thus offers a view of the nature of knowledge that supports the fluid, immersive, and participatory character of both social media in general and gamification specifically.

As with any Action Research, I employed a basic Action Research cycle (Hearn et al, 2009) of research question, action and evidence-gathering. The cycle began with the qualitative method of a focus group with male tobacco users and QuitNow staff in the Greater Vancouver area that produced data to identify the key elements of goals, rules, feedback and participation in the development of a basic game prototype. Two follow-up surveys, ten days apart, were conducted to identify what might work in the prototype, how to improve the prototype, and how
the participants’ inclusion in the process assisted the participants in their own tobacco cessation experience for translation into planning for the next cycle. My sample was determined through discussions with BC QuitNow Services as they had identified male tobacco users as the target audience for the use of gamification; they did so because there had been very little uptake of males in their social media platform, yet statistics suggest 55% of people online are male (Entertainment Software Association, 2013). We reached out through BC QuitNow Services and the Fraser Health Authority, using a promotional flyer posted through social media and high traffic locations. Although there was interest in the subject of the study, it was difficult to attract and confirm male tobacco users.

In discussion with my advisors, I opened up this process to include QuitNow Staff in the focus group. This was an innovative approach that served as a motivation to both sets of participants: the two male tobacco users, and the QuitNow staff. Since both of the male tobacco users involved in the focus group were involved with current QuitNow Social Media, it was an opportunity to highlight for QuitNow staff where they felt changes could be applicable. For the QuitNow staff it provided a casual discussion with an unfiltered view of how the game prototype could be used within their social media platform and what features of a tobacco cessation game would be attractive to potential clients. This unexpected element of the study allowed me to create a more robust set of recommendations that included recruitment potential and further co-creation. This approach led to QuitNow staff to ask the participants for further involvement as they move forward with this project. A total of four participants—two tobacco users and two staff—participated in this research.

The action research cycle (Hearn et al, 2009) of research question, action and evidence combines the theoretical framework of Ajzen’s theory of planned behaviour (Ajzen, 1985) and
the human-computer interaction (HCI) literature’s identification of social identity theory (Dholakia et al, 2004). A multiple theory approach such as used here recognizes the interdependencies of health behaviour change and understanding motivations for using online communities.

I have chosen planned behaviour theory due to its focus on an individual level of control and confidence to quit smoking as levers for health behaviour change. This framework was incorporated into the intervention design and follow-up with participants through the game prototype. Each survey included questions that identify how the theory of planned behaviour influences the use of the game prototype and highlights changes that increase the opportunities for tobacco cessation.

Social identity theory (Dholakia et al, 2004) acknowledges behaviour in the context of virtual communities, particularly around the sense of belonging and social identity. These determinants lead scientists to identify the motivational factors for utilization. This theory was woven in through questions that focus on what critical elements of the game prototype would entice and increase on-going involvement for behaviour change.

The multiple theory approach to data analysis provided a practical road map for BC QuitNow Services as they continue to develop and refine their gamification product. I expect to demonstrate, through the combination of the existing evidence and focus group participation, a promising practice for the tobacco control community that has not been attempted before.

**Section Four: Results**

**QuitNow Social Media Platform**

QuitNow has been involved in social media for many years with a focus on Facebook. They continue to develop, adapt and refine their platform based on the feedback of users and
health professionals in British Columbia. QuitNow recently implemented a Facebook participant survey that detailed results for the patterns of use and engagement of tobacco users. Their purpose for developing this survey was to provide intelligence to QuitNow staff to focus their adaptations where they can increase engagement with a larger audience of tobacco users, develop better content, identify missing features and increase overall quit attempts, the latter being the primary goal of any successful tobacco cessation program.

Inspiring the choice of male tobacco users as my informants and the exploration of gamification as a research topic was the fact that, QuitNow had identified that male tobacco users are not very engaged in the organization’s current social media platform. This concern is evident in their findings of their Facebook survey (QuitNow, 2014).
Cross-pollination between Facebook and the QuitNow.ca website is a strategy that is employed to provide numerous opportunities for assistance to tobacco users in multiple platforms. The survey showed that this strategy shows promise in increasing numbers to both options (QuitNow, 2014).

From QuitNow Power Point Presentation by the BC Lung Association. Reprinted with Permission

Ultimately, the goal of any tobacco cessation social media platform is to demonstrate its usefulness to tobacco users for their quit attempt. QuitNow validated this, indicating that through their Facebook survey they are attracting the appropriate audience and that their social media are contributing to overall quit attempts by participants (QuitNow, 2014).

From QuitNow Power Point Presentation by the BC Lung Association. Printed with Permission.
The survey contributes details for QuitNow that serve to emphasize the need to find ways to attract male tobacco users. I will discuss in more detail through my analysis of their findings, how current social media can integrate a larger male audience with the utilization of gamification and what measurement tools should be incorporated to measure that integration.

Participants

As previously discussed, I was able to secure an even number of participants, two male tobacco users and two QuitNow Staff. Although this does not represent the original numbers of participants I was looking for, this presented me with a challenge of how to make this study relevant for QuitNow as they move forward with future iterations. I chose to focus my energy on more robust, detailed discussions with the participants, including QuitNow staff as a precursor to future focus groups as they develop their product. This approach allowed me to spend more time on targeting my recommendations based on the literature and focus group responses while emphasizing important elements for further discussion. Consequently, the results are adequate as a solid beginning to QuitNow’s future development process moving forward.

Participants were anonymous and were assigned numbers in the data analysis to protect privacy while allowing the use of content drawn from their responses to support key themes in the focus group. #1 is a male smoker of approximately 25-30 cigarettes a week who is currently attempting to quit using stop-smoking medications, a cigarette log to identify smoking patterns, and behavioural techniques. #2 is a male smoker of approximately 7 cigarettes a day who is attempting to cut down daily use and eventually quit. #3 is a QuitNow staff who is involved in the development of various social media platforms and a previous smoker. #4 is a QuitNow staff that maintains and monitors the current QuitNow social media platform.
All four received regular emails about the purpose of the study, overall process for the development of the game prototype and consent details. Although all participants were comfortable with their names being shared as part of this study, in order to remain true to the initial proposal, I felt that anonymity would be appropriate and would allow for transparency in reporting.

**Game components**

All focus group participants have experience with gaming either through smartphone applications or video games. It was important to establish early in the process that the intent of this focus group was exploratory, to co-develop and design the essential elements of or a blueprint for a tobacco cessation game prototype. The focus of the data compiled provides overall themes for future discussion and development of the game prototype that emphasizes tactics that would appeal to tobacco using gamers.

An unexpected comment arose in this initial round of discussion. As #1 stated: “I use the break button on my games to have a smoke.” This raised an important issue that led to a discussion of whether our purpose together was to develop a game or define the parameters that coincide with tobacco cessation, and in particular health behaviour change theories. We acknowledged that we are not experienced game developers, and are better equipped to provide more feedback on techniques for tobacco cessation or in the case of current tobacco users their experience in quit attempts. In view of this limitation, we determined to make use of existing so-called “distraction-type games”; these games, which already exist and can be adapted for use by QuitNow through a contract with a game developer, were considered a more appropriate focus for our time together. For the purposes of this study, distraction-type games are defined as a relatively simple application that distracts the gamer from using tobacco by keeping his or her
attention through progression through levels that conquer cravings and reduce tobacco use. We
determined that these games already exist in abundance and could be purchased or developed
fairly easily. For example, a candy crush type game that focuses attention and creates
proficiency the more you play could be an interesting option. After we defined these as our
parameters, we concentrated our time on what makes the games applicable and appealing to a
male tobacco user audience.

Participants agreed that the gamer is the centre. In order to be attractive, there must be an
emphasis on user control relating to how they sign up, whether they are anonymous or part of a
like-minded group, and how they advance in the game. The ability to use the game anytime,
anywhere allows tobacco users to increase their chances of decreasing daily tobacco use. No
matter the games’ engrossing features and amenities, however, the underlying purpose to change
behaviour prevailed; for instance, as one of tobacco users said, the immediate and practical goal
of any such game must be to reduce tobacco use. #2 said the following:

The overall goal has to be to decrease my daily smoking to make it to the next level of
the game. It needs to include a baseline of how many cigarettes we smoke in a gamer
profile and connect to social media.

This gamer profile is a short five-question survey that provides demographic data and tobacco
use prevalence, and that connects to the current QuitNow social media platform. Gamers can
come and go at any time but game success relies on logging, identifying usage patterns, and the
capacity of distraction games’ ability to reduce daily tobacco use. All participants agreed that a
smartphone application would provide the most flexibility, access and opportunity for
adaptation. #2 said the following: “There needs to be ease of use, just like smoking. It’s a quick
app that tracks how much you’re cutting your numbers per day in a tiered gaming system.”
This led to an important distinction that was critical to the further discussion of our blueprint and kept us focused on the importance of keeping QuitNow goals at the forefront. #3 stated the following: “We need a distraction game. One that helps people quit. To engage people that drives them to the website.”

In the results section for the current state of QuitNow’s social media platform, they identified the cross-pollination of Facebook and the website. This statement recognized the importance of this within game design, application and promotions. #1 identified Candy Crush as an example of a distraction-type game that provides the types of features, which would be necessary to attract and retain tobacco users while offering the type of achievements or levels that maintains interest. #4 identified spoke to this point: “People will need recognition for achieving the elements of the game.”

This acknowledgement of achievement in the game, coinciding with the health benefits of reducing tobacco use, provides a unique challenge for our blueprint. Participants agreed that a given of gamer engagement would be their basic interest in quitting or reducing tobacco use coupled with the confidence about their intention to quit. I referred to the theory of planned behaviour as a touchstone for this discussion as it provides a simple explanation for intention of changing behaviour. That is, our prototype needs to strategically emphasize target factors that influence and increase behavioural control over tobacco use. This can be done by confirming game appeal through its ease of use, and the ongoing recognition of benchmarks in the journey to quit tobacco use.

Both #1 and #2—the tobacco users in the focus group—identified the reasons that they attempt to quit. “My family is my reason for trying to quit,” #1 said. “I never let my daughter see me smoke,” volunteered #2. Recognition of the power of family, friends and social supports as a
component of the game prototype allows us to integrate things such as leaderboards and
competition. This connects to social identity theory, which identifies that membership in a group
contributes to successful achievement and that comparison is seen as a positive. Given that all
focus group participants were male this is an important distinction in the results. All agreed that
the need for competition is a natural factor in most males and would need to be an option for
participation, though not the only option. #3—a QuitNow staffer--addressed the issue of
competition: “A leaderboard would be good but [a game designer] must recognize how to do it
so it doesn’t crush people that are trying. Points can be a positive outcome of behaviour
change.”

Creating a delicate balance between healthy competition with incentives and overall
positive reinforcement of any behavior change presents a complex challenge, but not an
insurmountable one. If done properly, such a game would, as a desirable feature, elect not
to pit one group of tobacco users against another. #1 had an idea of how that could be
addressed: “Different levels of smokers could be grouped together to create a level playing
field. For example, people who smoke 1-10 cigarettes a day competing in a group, people
who smoke 12 to 20 cigarettes and so on.” All agreed that these group-play options provide
an opportunity for greater enjoyment and engagement for those players that find
competition against others motivating. #2 thought this approach wasn’t a first step and
offered another option for discussion and debate:

Part one should be individual; then you could graduate to a group challenge like

*Floppy Bird* that allows you to compete with friends. You could handicap the
number of cigarettes a day like you would golf, and there could be ultimate leagues
that you try to work towards joining.
All participants agreed that re-programming people’s minds to replace tobacco use breaks with use of this game would be the ultimate challenge. Of course, this type of approach wasn’t without controversy in our discussion. The question became “aren’t we just trading one addiction for another?” This brought us into a discussion of why this is an acceptable outcome of this game. All participants agreed that replacing an unhealthy habit by utilizing a distraction game is just another tactic, among many, that tobacco users employ to reduce use. An unexpected positive outcome of this could be to, as a secondary feature of social media-based health-promotion games, to include healthy behaviours in the point system. As #2 stated to this effect: “The more healthy things I do, the more I gain.”

This emphasis on healthy behaviours as part of the game content or reward system was not the focus of the original blueprint, but all felt it was good for QuitNow to consider as they develop their product further. Another discussion focused on the use of educational facts about tobacco use within the game elements. All agreed that this would be useful, but that such educational content should be used judiciously, as it has the potential to create backlash from tobacco users.

There was recognition that there is not an unlimited amount of funding or expertise at QuitNow to develop a game. Therefore, participants agreed that there are cost-effective, time-sensitive ways to develop a game prototype while utilizing QuitNow expertise in the areas that make the most sense. #4—a QuitNow staffer—addressed the issue of cost: “We could access existing distraction games and purchase them fairly easily. We could also look at gamer blogs and suggest this as a project.” There was consensus on keeping the overall prototype—or prototypes—to seven to ten games, at a maximum of five minutes per game. All agreed that evaluation would be necessary to keep things current, fresh and
innovative. #4 said, relating to evaluation, that “research questions would drive the changes as the games must constantly evolve to keep the gamers’ attention. This makes this an ever-evolving prototype.”

Positive reinforcement of change through badges provides self-incentives for gamers. The following is the result of the Focus Group discussion, as explained in a table format:

**Round One: Game Prototype Blueprint A**

Game Prototype: April 6th, 2014  Working Title: I Play…I Quit

- Intention to quit tobacco use is a precursor of game interaction.
- Games played would be distractions, based on a time-limited, ever-evolving pool of examples.
- Incentives would be used only as draw prizes with points as the currency.
- The game would be a smartphone application connected into current QuitNow social media platforms.

<table>
<thead>
<tr>
<th><strong>Goals</strong></th>
<th><strong>Rules</strong></th>
<th><strong>Feedback</strong></th>
<th><strong>Participation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease the amount of daily tobacco use.</td>
<td>Develop a gamer profile (5 questions maximum) with both public and private options.</td>
<td>Points would be posted in a leaderboard.</td>
<td>Promotion would be through social media channels, events and traditional media.</td>
</tr>
<tr>
<td>Replace cravings with game play.</td>
<td>Levels and points is achieved through a decrease in daily use.</td>
<td>Leagues would be available for group play but not required.</td>
<td>A consent box that identifies rules, goals and feedback would be filled out by</td>
</tr>
<tr>
<td>Increase the numbers of points that are used as currency for prizes.</td>
<td>Gamers are responsible for updating progress for inclusion on leaderboards.</td>
<td>Individual progress bars and reminders of game play would be included.</td>
<td>Gamers can come and go from the game at their own pace.</td>
</tr>
<tr>
<td>Compete against others to make it faster through the levels.</td>
<td>Gamers will be handicapped based on their daily cigarette use.</td>
<td>Connection to current social media options would be prominent.</td>
<td>Privacy will be protected at all times.</td>
</tr>
<tr>
<td>Gamers individually determine the adoption of the use of the game.</td>
<td>Progress would be based on positive reinforcement.</td>
<td>Gamers determine their level of interaction with other gamers.</td>
<td></td>
</tr>
</tbody>
</table>
Round One: Follow-up Survey

Survey #1 was conducted ten days after the focus group and focused on expectations and experience: increased knowledge, tobacco cessation behaviour change and necessary game prototype changes. Three of the four focus group participants sent in their follow-up survey.

Survey participants identified that their expectations were met in the session. They felt it was informative, provided a forum for discussion, and that the experience was fun. One participant is looking forward to being able to play the game and see how it helps their quit attempt. Another participant spoke to the focus group’s value: “I felt it was very productive – everyone had a space to speak and brought different perspectives. The conversation flowed very naturally, but was well directed. The experience of having tobacco users and QuitNow staff in the same focus group created a shared understanding that allowed for knowledge transfer between the two groups. It helped create understanding about the challenges of quitting tobacco use and how to develop a game. Involvement did not change tobacco use but provided useful insight into future attempts when the game is available for use.

The goals (as enumerated in Prototype Blueprint A above) need some minor adjustments to ensure clarity and focus. Overall, most of the goals were clear, though there were elements that require a better description. The goals of decreasing daily tobacco use and replacing cravings with game play were transparent, cogent and concise. Acknowledgement of a starting point, for example, such as spotting the user with a five-points when they sign up, will start the player on a positive note. Goals three through five should be re-worked to read like goal statements. The changes reflect the opinion of the focus group attendees through the survey and provide better clarity around the goals and objectives of the game that would result in a more robust experience of the end users. Changes are reflected in Prototype Blueprint B.
One participant felt that making the distinction between whether the game is about the tobacco habit, through helping to monitor, evaluate and compare progress, versus identifying it as a game that helps beat their cravings should be well defined.

From my perspective there are already thousands of video games out there that can be used to distract yourself for a couple of minutes, and we shouldn’t worry about duplicating products. If there was an easy way to license a basic game and incorporate it into the game structure, great, but if not I don’t think it should be the central priority.

Participants felt that changing the “rules” section to “features” would better reflect how the prototype is written. A better description is needed to define how you collect points. For example, you would incur ten points for every time you reduce a cigarette by playing the distraction game. Points would increase for every time you decrease. How points are gathered would be an important feature to gamers. Participants also pointed out that the definitions in the game need refinement so that someone reading the prototype blueprints knows what we are describing as a feature.

The feedback system and participation sections require minimal changes. Participants identified a need to provide continuous feedback channels for gamers, constant refinement of games, and the ability to come and go as they please as important elements. Overall, minor adjustments that allow for better clarity around components is essential in laying a foundation that people can easily follow. Participants said that they liked a mix that allows for social competition plus personal learning and evaluation.

In the planned prototype, the focus group members said they would like to see examples of the types of games that would be available to use through QuitNow. The prototype will include a game description section that outlines this for them.
**Round Two: Game Prototype B**

April 15th, 2014  Working Title: I Play…I Quit

- Intention to quit tobacco use is a precursor of game interaction.
- Games played would be distractions, based on a time-limited, ever-evolving pool of examples.
- Incentives would be used only as draw prizes with points as the currency.
- The game would be a smartphone application connected into current QuitNow social media platforms.

Distraction Game Examples: A series of seven to ten that take approximately five minutes to complete. [http://www.distract-games.game37.net/](http://www.distract-games.game37.net/) provides examples and the ability to create your own application. Tetris-type games, defined as simple, puzzle-like games involving different configurations that fit together, would be the best for distraction play in each individual level.

<table>
<thead>
<tr>
<th>Goals</th>
<th>Features</th>
<th>Feedback</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease the amount of daily tobacco use.</td>
<td>Develop a gamer profile (5 questions max) with both public and private options.</td>
<td>Points would determine a ranking on a leaderboard.</td>
<td>Promotion would be through social media channels, events and traditional media.</td>
</tr>
<tr>
<td>Replace cravings with game play.</td>
<td>Individual levels are achieved through accumulation of points for reducing tobacco use. More games are unlocked.</td>
<td>Leagues would be available for group play but not required.</td>
<td>A consent box that identifies rules, goals and feedback would be filled out by gamers.</td>
</tr>
<tr>
<td>Encourage participation through an incentive system.</td>
<td>Gamers are responsible for updating progress for inclusion on leaderboards that increases prize draw opportunities.</td>
<td>Individual progress bars and reminders of game play would be included.</td>
<td>Gamers can come and go from the game as they please.</td>
</tr>
<tr>
<td>Foster competition among participants.</td>
<td>Gamers are assigned handicaps through game play based on their daily tobacco use and integrated into groups that most fit their usage rates.</td>
<td>Connection to current social media channels would be prominent.</td>
<td>Privacy will be protected at all times.</td>
</tr>
<tr>
<td>Increase adoption through recognition</td>
<td>Positive reinforcement will be accomplished through the use of</td>
<td>Gamers determine their level of interaction with</td>
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</table>
of individual targets. | badges to identify reduction in use and send personal messages of encouragement. | other gamers.

**Round Two: Follow-up Survey**

Survey #2 was conducted ten days after Survey #1 and focused on final changes to the game prototype, experience in the process, increased knowledge for tobacco cessation behaviour change, and final words for QuitNow as they take this report forward for potential adoption. Two of the four focus group participants sent in follow-up survey #2.

Participants felt that the goals were clear and engaging. The focus is on cutting down tobacco use, potential for individual and group targets, and an undercurrent of competition; these features together provide a framework that may create interest among male tobacco users, given its emphasis on the type of activities that would most likely appeal to them. Participants emphasized that the games should be fairly simple to allow for easy access and play while offering an option besides using tobacco.

All agree the features should be based on levels. In the second prototype we looked at *Tetris*-type games as an option. Such games create a challenge, while sustaining interest through moving from level to level. One participant said to this effect: “The tetris game is a good start. The deeper you go and the more you unlock the more challenging the game should be.”

The importance of creating the right mix between sophistication of the game features and ease of use was something that the group thought would be a challenge. All participants felt that
challenging users would create connections for tobacco users; however, it is important to note that this will need to be a continuous improvement project, with the game(s) always evolving to sustain the interest of gamers.

All the participants felt we hit the mark on feedback from players and on whether the game has appeal to male tobacco users. One participant remarked that female tobacco users may find this of interest too. The potential for building out of this prototype to reach all tobacco users is appropriate to discuss and review for QuitNow. The participants felt that Prototype B was an accurate reflection of our discussions and looks interesting to play. One participant said to this end that “I can see the lay-out and it looks like it’s going to be something interesting to try and do.”

As with any tobacco cessation initiative, the challenge remains for the male tobacco users involved in this project to quit. Although this project didn’t change their tobacco use status, one participant remarked on how he wants to be smoke-free. He offered a poignant comment: “Mine [his status as a smoker] has not changed. Sorry to say. I just want to be smoke-free.”

It is important to note that participants are anxious to see the outcome of this project in action. They are hopeful that QuitNow will learn from this project and put something into play quickly. One participant said to this: “LET’S GET IT UP AND RUNNING. Make sure to let your start-up players know that there are bugs to work out for now.” These participants are very interested in what will happen now with this information and how will they be informed as to its progress. An outcome of this project is that the QuitNow staff involved in the focus group will most likely continue discussions with the male tobacco users.

All participants felt that their time spent in this project was worthwhile, interesting and educational. It provided a unique opportunity for QuitNow staff to be involved directly with the
target audience. One participant remarked that the study came from a different point of view as relates to health promotion messages; he is hopeful that the information will be used and that the game works to reduce tobacco use.

**Final Prototype**

April 25th, 2014   I Play…I Quit

- Intention to quit tobacco use is a pre-determined aspect of gamer interaction.
- Games played would be distraction-based through a time-limited, ever-evolving pool of examples.
- Incentives would be used only as draw prizes with points as the currency.
- The game would be a smartphone application connected into current QuitNow social media platforms.

Distraction Game Examples: A series of seven to ten games that take approximately five minutes to complete. [http://www.distract-games.game37.net/](http://www.distract-games.game37.net/) provides examples and the ability to create your own application. Tetris-type games would be the best fit for play and should increase challenge as players move forward.

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<td>Decrease the amount of daily tobacco use.</td>
<td>Develop a gamer profile (5 questions maximum) with both public and private options.</td>
<td>Points would determine a leaderboard ranking.</td>
<td>Promotions would be through social media channels, special events and traditional media.</td>
</tr>
<tr>
<td>Replace cravings with game play.</td>
<td>Individual levels are achieved through accumulation of</td>
<td>Leagues would be available for group play but not required to</td>
<td>A consent box that identifies rules, goals and feedback would</td>
</tr>
<tr>
<td>Points for reducing tobacco use. More games are unlocked as the player progresses through the levels.</td>
<td>Participate.</td>
<td>Be filled out by gamers.</td>
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<tr>
<td>Encourage participation through an incentive system. Gamers are responsible for updating progress for inclusion on leaderboards to increase prize draw opportunities.</td>
<td>Individual progress bars and reminders of game play would be available for viewing by players.</td>
<td>Gamers can come and go from the game as they please.</td>
<td></td>
</tr>
<tr>
<td>Foster competition among participants. Gamers are assigned handicaps through game play based on their daily tobacco use and are integrated into groups that are the best fit for their usage.</td>
<td>Connection to current social media channels would be prominent and provide social supports for use.</td>
<td>Privacy will be protected at all times and clearly identified during sign-up.</td>
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Increase adoption through recognition of individual targets and group play outcomes.

Positive reinforcement will be accomplished through the use of badges to identify reduction in use and send personal messages of encouragement.

Gamers would provide regular feedback on enhancing current game options.

Gamers determine their level of interaction with other gamers.

| Increase adoption through recognition of individual targets and group play outcomes. | Positive reinforcement will be accomplished through the use of badges to identify reduction in use and send personal messages of encouragement. | Gamers would provide regular feedback on enhancing current game options. | Gamers determine their level of interaction with other gamers. |

**Section Five: Discussion**

The current QuitNow social media platform has performed relatively well with a small budget and the overall challenge of being attractive to tobacco users while facilitating their behaviour change. In my review of the platform’s current state, I found that they have the essential elements for successful gamification implementation; this includes anonymity if desired, social supports, responsiveness, integrated content for knowledge transfer, and regular content curation. These features set up opportunities for a further vigorous discussion about what is needed to develop their platform, increase the usefulness for participants, and identify those levers that result in behaviour change.

I would, however, recommend that QuitNow enhance their platform by increasing their connection to an overall theoretical framework. As previously suggested in this study, underpinning their work with the theory of planned behaviour and social identity theory will
create a foundation that emphasizes the important of behavioural intention, confidence in shifting behaviour, and overall interest towards group membership. These theories would be easily integrated and have the potential for establishing sophisticated metrics when evaluating outcomes.

Another important consideration with the current social media platform is the influence and ability of the target audience to provide ongoing feedback into the improvements. During the focus group process, the male tobacco users had quality feedback and genuine interest in assisting in the development of the game prototype and the enhancement of current QuitNow social media platforms. For social media to be effective, it needs to be ever-evolving, fresh and innovative. QuitNow has done a fairly effective job of survey research but I would suggest that developing a community engagement protocol, such as the “Spectrum of Participation” (International Association for Public Participation, 2014), could be an effective tool to integrate the target audience in an on-going, sustainable way while ensuring that the decision-making process for change is clearly defined.

The use of action research, through an experimental focus group, was an effective, time-efficient way to integrate potential user feedback into prototype design. Although it was difficult to attract and retain participants, I was able to adjust my original design to allow for a combined focus group of end users with QuitNow staff. This project presented an exceptional and somewhat rare chance for male tobacco users and QuitNow staff to discuss challenges from both perspectives of QuitNow and the end user that increased the knowledge of potential options, and provided the opportunity for further dialogue. An unintended outcome of this study was that QuitNow staff identified interest in having the focus group participants involved in the future development of their social media platform and game prototype.
Through the literature search and research conducted, it is clear that gamification provides an effective tool in the arsenal of QuitNow’s social media platform; that is because gamification highlights an evidence-based, novel approach that uses technological innovations to reach and influence end users’ behaviour change. QuitNow can achieve this by enhancing their current social media with a closer alignment to behavioural change theory, integrating end user feedback in overall design and identifying this as a continuous improvement strategy, QuitNow can apply this study as a strong rationale for redevelopment and adaptation. The focus on male tobacco users is a well thought-out strategy moving forward because of current lower social media usage rates among men. QuitNow has identified that they are in the preliminary stages of developing a targeted male tobacco user website. By integrating this study with the game prototype into those discussions, they have the ability to expedite their progress and test this in real time.

While I identified the need for a strong evaluation as part of this study, my research revealed that there are very few examples available in the literature. I recommend that QuitNow continue with their existing survey structure while developing a strong evaluation process for the game prototype that provides them with both qualitative and quantitative data. This will be a necessary component for the British Columbia Ministry of Health to determine effectiveness and numbers of tobacco users involved and their reduction of use for the justification of continued funding of an enhanced social media platform.

Section Six: Conclusion/Limitations/Recommendations for Future Research

As with any human subject research, due care and attention was paid to the experience of the participants and their confidentiality. Currently, there is no indication of conflict of interest, power over relationship, or harm. My research was guided by the principles of the Tri-Council
Ethical Review Board. Due to time constraints, I chose to limit the scope of this study to male tobacco users of varying ages and QuitNow staff, and with them both to work collaboratively on the development of a simple game prototype proposal. The sponsoring agency, BC QuitNow Services, limited the participants to males due to existing struggles relating to engagement of that population. Since this limit is congruent with the literature regarding the high male rates of tobacco use and men as gamification target audiences, it made sense to limit the scope of the prototype to this audience.

Due to time constraints, I included two rounds of the Action Research Cycle within this study through the use of a focus group for the development of a game prototype, then two follow-up surveys that focus on improvements to the prototype. A simple guide featuring recommendations for future development of the game prototype was provided to BC QuitNow Services.

Gamification opens up a new world for tobacco control. Future research should focus on increasing the evaluation data relating to effectiveness, identifying a framework for gamification that increases behaviour change, and experimental research that tests and refines gamification products. It is expected that gamification will increase exponentially with the explosion of smartphone applications and technology. There are numerous opportunities for QuitNow to contribute real-time usage research that can assist other health behaviours such as weight loss while bringing things to market more quickly.

This study lays the foundation for that continuous improvement model that challenges health promotion practitioners to become more familiar with how technology can improve outcomes and contributes to health behaviour change. Researchers will need to expand their contributions through instituting a stronger connection with end users, as well as employing
more qualitative methods that provide a higher-resolution picture of social media’s influence on behaviour change.

As defined in this study, the integration of practitioners with end users creates a fresh approach to research that sets the stage for future collaborations.
References


